BUREAU OF LAND MANAGEMENT - ALASKA
STATEWIDE LAND HEALTH STANDARDS

Introduction

This document sets forth land health standards that describe the desired ecological conditions and goals that the Bureau of Land Management (BLM) intends to maintain, or attain, in managing lands throughout Alaska. Land health considers the needs and contributions of the affected ecosystem, including water, wetlands, riparian areas, soil, forest resources, taiga and tundra, mountains, coastal regions, glaciers, minerals, fish and wildlife species and habitat, heritage resources, and human uses.

The land health standards establish goals for BLM managed land and resource conditions in Alaska, and are criteria for land use planning decisions. The BLM intends that these standards promote healthy, sustainable ecosystems that support a wide range of public values and uses, reflective of the BLM multiple use land management mission. The BLM further intends to provide for a wide variety of public land uses without compromising the long-term health and diversity of the land and without sacrificing significant natural, cultural, and historical resource values. BLM will use the best available scientific and technical information as a basis for land and resource management decisions. These standards, in conjunction with factors such as economic, social, and cultural aspects, create a balanced approach to considering proposed activities on the public lands. Guidelines are also provided to outline practices and procedures that BLM may apply to achieve the standards.

Ecological Functions and the Fundamentals of Land Health

Within each ecosystem there is a hierarchy of ecological functions and processes. An ecosystem consists of four primary, interactive functional components: (1) a physical component, (2) a biological component, (3) a social component, and (4) an economic component. The physical function of an ecosystem supports the biological component--its health, diversity, and productivity. In turn, the interaction of the physical and biological components of the ecosystem provides the resource needs of society and the economy.

A healthy ecosystem, or an ecosystem that is recovering its health, contains the following fundamental physical and biological attributes:

- Watersheds are in, or are making significant progress toward, properly functioning physical condition, including their upland, riparian, wetland, and aquatic components; soil and plant conditions support infiltration, soil moisture storage, and the release of water that are in balance with climate and landform and maintain or improve water quality, water quantity, and timing and duration of flow.

- Ecological processes, including the hydrologic cycle, nutrient cycle, and energy flow, are maintained or there is significant progress toward their attainment in order to support healthy biotic populations and communities.

- Water quality complies with State water quality standards and achieves, or is making significant progress toward achieving, established BLM management objectives, such as meeting wildlife needs.

- Habitats are, or are making significant progress toward, being restored or maintained, including Federal threatened and endangered, Federal proposed, and other special status species.

Standards and Guidelines and Resource Management Planning

Future BLM land use plans and land management decisions will incorporate statewide standards. Social and economic needs expressed by local communities and individuals will also be considered in the goals of the plans and decisions. Specific terms and conditions/stipulations will be considered to ensure progress is achieved in a way, and at a rate, for the plan goals and objectives. In designing and implementing guidelines, the potential of the site must be identified. Any constraints must be recognized so plan goals and objectives are realistic and physically, economically achievable. The BLM will then use these standard statements to develop specific Resource Management Plan (RMP) objectives and indicators, addressed in the National Environmental Policy Act (NEPA) process for the RMP. The standards will be implemented with appropriate planning decisions after completion of the RMP. The authorized officer will coordinate, consult, and cooperate with interested parties including local, State and Federal agencies, Tribes, Native corporations, and interested publics during all phases of implementing standards and guidelines.

The BLM will strive to make use of collaborative approaches involving the various interested publics within an affected area. The Resource Advisory Council may be requested by any party to assist in reaching agreement in resolving disputes.

Some of the criteria the authorized officer will use to prioritize areas in the application of standards and guidelines are as follows:

- Are there situations where legal requirements must be met?
- Is there information to indicate resources are at risk of being lost or that the severity of resource damage demands immediate attention?
- Is use conflict present?
- Is there public concern or interest for possible resources at risk?
- What is scheduled for completion according to the Resource Management Plan implementation schedule?
- Where can efficiencies with limited resources be realized?
- Where are the best opportunities to effect positive change toward public land health?
- Are there permits or resource use authorizations that need action?

Standards

There are five Standards by which the diversity and ecological health of BLM managed land will be measured:

Watershed Function-Uplands
Watershed Function-Riparian, wetland, aquatic areas
Ecological processes
Water quality and yield
Threatened, endangered, native, and locally important species

Standards are written in a two-part format. A standard is first described in a statement; then indicators that are related to the standard are identified. While statements of standards addressing the needs of healthy physical and biological ecosystem components may be similar across the Nation, the indicators that relate to the standard statements will be specific for each ecosystem. Variability among the indicators will depend on distinctive physical and biological elements of an ecosystem, not on the land use. The indicator should be based upon the potential (or upon the capability where potential cannot be achieved) of individual sites or landforms. Indicators may be qualitative and can be used to monitor whether management is achieving

maintenance of, or a trend toward, or away from the standard. In addition, traditional knowledge of an area can provide information on trends, both historic and current.

Watershed Function-Uplands Standard: When functioning properly within its capability, a watershed captures, stores, and safely releases the moisture from normal precipitation events (equal to or less than the 25-year, 5-hour event) that occur within its boundaries.

While all watersheds consist of similar components and processes, each is unique in its makeup. Each watershed displays its own pattern of landform and soil, unique climate and weather patterns, and its own history of use and current condition.

In directing management toward maintaining or achieving this watershed standard, treat each unit of the landscape (soil, ecological site, and watershed) according to its capability and relationship to smaller and larger units of the landscape.

Goal: To ensure that watersheds are in, or are making significant progress toward, a properly functioning physical condition that includes their upland, riparian, wetland, and aquatic areas. The infiltration and permeability rates, moisture storage, and stability of upland soils are appropriate to the watershed's soil, climate, and landform.

Objective 1*: Protect the soil surface from erosion; avoid detention of overland flow; maintain infiltration and permeability that are consistent with the potential/capability of the site.

Possible success indicators:

- amount and distribution of plant cover (including forest canopy cover)
- amount and distribution of permafrost
- soil temperature/depth profile
- soil moisture
- amount and distribution of plant litter
- accumulation/incorporation of organic matter
- amount and distribution of bare ground
- amount and distribution of rock, stone, and gravel
- plant composition and community structure
- thickness and continuity of the first layer of soil containing organic matter
- character of micro-relief
- presence and integrity of biotic crusts
- root occupancy of the soil profile
- biological activity (plant, animal, and insect)
- absence of accelerated erosion and overland flow

Objective 2: Promote moisture storage by soil and plant conditions consistent with the potential/capability of the site.

Possible success indicators:

- amount and distribution of plant cover (including forest canopy cover)
- amount and distribution of plant litter
- accumulation/incorporation of organic matter
- plant composition and community structure
- snow depth/moisture content

Watershed Function-Riparian, wetland, aquatic areas standard: "Properly functioning" riparian, wetland, and aquatic areas maintain or enhance the timing and duration of stream flow in the watershed. They do this through dissipation of flood energy, improved bank storage, and groundwater recharge.

Goal: To ensure that watersheds are in, or are making significant progress toward, a properly functioning physical condition that applies to upland, riparian, wetland, and aquatic areas. The riparian, wetland, and aquatic areas are functioning properly at levels appropriate to the watershed's soil, climate, and landform.

Objective 1: Hydrologic, vegetative, and erosion/depositional processes support physical functioning, consistent with the potential or capability of the site.

Possible success indicators:

- frequency of floodplain/wetland inundation
- amount and distribution of aufeis
- amount and distribution of permafrost
- hydrograph time/temperature graph
- plant composition, age class distribution, and community structure
- root mass
- point bars revegetating
- streambank/shoreline stability
- riparian area width
- sediment deposition
- active/stable beaver dams
- coarse/large woody debris
- watershed conditions of adjacent uplands
- frequency/duration of soil saturation
- water table fluctuation

Objective 2: Stream channel, lake bed, shoreline characteristics are appropriate for the landscape position.

Possible success indicators:

- channel width/depth ratio
- entrenchment benthic communities channel sinuosity
- gradient
- rocks and coarse and/or large woody debris
- overhanging banks
- pool/riffle ratio
- pool size and frequency
- stream embeddedness

Ecological Processes Standard: Plants play an important role in soil development and watershed functions. Plants also provide habitat for wildlife and human economic use. Nutrients necessary for plant growth come from the atmosphere, the weathering of rocks, and from insects, bacteria and fungi that metabolize organic matter. The soil transports nutrients through plant uptake, leaching, and rodent, insect, and microbial activity. Conveyance follows cyclical patterns as nutrients are used and reused by living organisms.

The ability of the land to supply resources and satisfy social and economic needs depends upon the buildup and cycling of nutrients over time. Interrupting or slowing nutrient cycling can lead to site degradation because the lands become deficient in the nutrients that plants require.

Consider the role of fire in natural ecosystems, whether it acts as a primary force or as only one of many factors. It may play a significant role in both nutrient cycling and energy flows.

Goal: To ensure that water and nutrient cycling and energy flow support healthy, productive, and diverse natural communities. Water and nutrient cycling and energy flow occur effectively to support healthy, productive, diverse communities at levels appropriate to the potential/capability of the site.

Objective 1: Photosynthesis is effectively occurring throughout the growing season, consistent with the potential/capability of the site.

Possible success indicators:

- plant composition and community structure

Objective 2: Nutrient cycling is occurring effectively, consistent with the potential/capability of the site.

Possible success indicators:

- plant composition and community structure
- fire history mapping
- fire return rate
- fire severity distribution
- animal migrations and other behavior patterns
- groundwater flow interruptions
- accumulation, distribution, incorporation of plant litter and organic matter into the soil
- animal community structure and composition
- root occupancy in the soil profile
- biological activity including plant growth, herbivory, and rodent, insect, and microbial activity

Water Quality and Yield Standard: States are legally required to establish water quality standards and federal land management agencies are required to comply with those standards. In mixed ownership watersheds, BLM — like any other landowner — has limited influence on the quality of the water yielded by the watershed.

Many forces determine the quality of the water in a watershed: physical and chemical properties of the geology and soils unique to the watershed; prevailing climate and weather patterns; current resource conditions; and land use and land management decisions. Standards 1.1., 1.2., and 2.0 contribute to achieving this standard and the indicators are included here by reference.

Goal: To ensure that surface water and groundwater quality (to the extent that BLM actions can influence water quality in the area) complies with state water quality standards.

Objective 1: Water quality meets state water quality standards.

Possible success indicators:

- water temperature
- dissolved oxygen
- fecal coliform
- turbidity
- pH
- populations of aquatic organisms
- effects on beneficial uses (i.e., effects of management activities on beneficial uses as defined under the CWA and state regulations)
- specific conductivity
- water chemistry, including nutrients and metals
- total sediment yield including bed load
- levels of chemicals in bioassays
- change in trophic status

Threatened and Endangered, Native, and Locally Important Species Standard: This standard focuses on retaining natural populations and restoring to viability native plant and animal (including fish) species, populations and communities (including threatened, endangered, and other special status species of local importance).

Goal: To ensure that habitats support healthy, productive, and diverse populations and communities of native plants and animals (including special status species and species of local importance, e.g., those used for subsistence).

Objective: Essential habitat elements for species, populations, and communities are present and available to the extent they are consistent with the potential/capability of the landscape.

Possible success indicators:

- plant community composition, age class distribution, and productivity
- animal community composition and productivity
- habitat elements
- spatial distribution of habitat
- habitat connectivity
- population stability/resilience (within natural population cycles)
- fire history

Guidelines

Guidelines for land management offer guidance in achieving plan objectives, meeting the standards, and fulfilling the fundamentals of land health. Guidelines are applied in accordance with the capabilities of the resource in consultation, cooperation, and coordination with permittees or lessees, public land users, and the interested public. Guidelines enable managers to adjust management on public lands to meet current and anticipated climatic and biological conditions, while considering cultural and local economic needs.

Assessment and monitoring are essential to the management of public lands, especially in areas where resource problems exist or issues arise. Monitoring should proceed using a qualitative method of assessment to identify critical, site-specific problems or issues. Monitoring will be done by interdisciplinary teams of specialists, managers, and knowledgeable land users. Once identified, critical, site-specific problems or issues will be targeted for more intensive quantitative

monitoring or investigation. Priority for monitoring and treatment will be given to those areas that are ecologically declining or at risk of being impacted. Benefits will be maximized within existing budgets and other limited resources.

General Guidelines

1. Overland movement (where roads are not available) of equipment, materials, and supplies is allowed when soils are frozen and sufficient snow cover is available to prevent soil compaction and loss or damage to vegetation.

2. Roads and trails are engineered, constructed, and maintained in a manner that minimizes the effect on landscape hydrology; concentration of overland water flow, subsurface water flows; minimizes erosion, and minimizes sediment transport.

3. Treatments to alter the vegetative composition of a site, such as prescribed burning, seeding, or planting will be based on the potential of the site and will:

    a. retain or promote infiltration, permeability, and soil moisture storage;
    b. contribute to nutrient cycling and energy flow;
    c. protect water quality;
    d. help prevent the introduction and spread of noxious weeds;
    e. contribute to the diversity of plant communities, and plant community composition and structure;
    f. support the conservation of threatened and endangered, other special status species, and species of local importance.

4. Seeding and planting non-native vegetation should only be used in those cases where native species are not available in sufficient quantities; where native species are incapable of maintaining or achieving the standards; or where non-native species are essential to the functional integrity of the site.

5. Structural and vegetative treatment and animal introduction in riparian and wetland areas will be compatible with the capability of the site, including the system's hydrologic regime, and maintenance or restoration of properly functioning condition.

6. New structures are located away from riparian or wetland areas if they conflict with achieving or maintaining riparian or wetland function. Existing structures are used in a way that does not conflict with riparian or wetland functions or are relocated or modified when incompatible. (NOTE: This is not intended to preclude activities which by nature must occur within riparian or wetland areas, such as placer mining.)

7. Projects affecting water, and associated resources, including development of springs and seeps, will be designed to protect ecological functions and processes.

8. Management practices will consider protection and conservation of known cultural resources, including historical sites, prehistoric sites, and plant and animal populations of significance.

9. In order to eliminate, minimize, or limit the spread of noxious weeds, only certified feed (hay cubes, hay pellets, etc,) will be permitted on BLM lands.

10. Heavy concentration of activities in sensitive wildlife and plant habitats will be avoided.

11. Where practical, use will be redirected, as necessary, to protect Federal and State listed and candidate Threatened and Endangered species habitat, to enhance indigenous animal population, and to otherwise maintain public land health through avoidance of sensitive habitat.

12. Human use will be managed to achieve and maintain water quality standards and avoid waste management problems and water quality impacts.

13. Fish and wildlife habitat on public lands will be maintained and protected, and the habitat needs of fish and wildlife resources necessary to maintain or enhance such populations will be provided.

14. Fish and wildlife resources and habitat will be managed to ensure compliance with the Endangered Species Act (ESA) and to ensure progress towards recovery of listed threatened or endangered species.

15. Forest resources will be managed to ensure biodiversity, long-term productivity, and a wide spectrum of multiple uses, including scenic values, recreation, fish and wildlife habitat, watershed protection, and timber harvest.

16. Vegetative resources will be managed to provide reasonable protection (particularly near developed areas) from destructive agents, such as fire, insects, and disease.

17. Soil erosion will be minimized by restricting the removal of vegetation adjacent to streams and by stabilizing disturbed soil as soon as possible. (NOTE: This is not intended to preclude activities which by nature must occur within riparian or wetland areas, such as placer mining.)

18. To the extent feasible and prudent, channeling, diversion, or damming that will alter the natural hydrological conditions and have a significant adverse impact upon riparian habitat will be avoided. (NOTE: This is not intended to preclude activities which by nature must occur within riparian or wetland areas, such as placer mining.)

19. Land management practices will be directed to avoid or minimize adverse impacts upon the hydrological, habitat, subsistence, and recreational values of public wetlands.

20. Activities in wetlands will comply with Federal permit requirements related to the fill, removal, and alteration of wetlands.

21. Management practices will consider protection and conservation of biodiversity.

Guidelines for Public or Agency Involvement and Coordination

Public Participation

- Resolve problems and implement decisions in collaboration with other agencies, State, municipalities, Native corporations, and the public.
- Ensure the BLM land users and stakeholders have a meaningful voice in establishing policy and managing BLM land in Alaska.
- Provide the general public with meaningful opportunities to participate in and influence the process of decision making affecting BLM-managed land in Alaska.
- To the extent practical and warranted by local conditions, hold public meetings in the Alaskan community or communities most impacted by proposed decisions affecting BLM land.
- When setting deadlines for public participation, recognize and provide for the extra time it takes mail to reach people in rural Alaska. The seasonality of subsistence dependent communities and the land users will also be considered.

Government, Organization, and Community Participation

- Provide local governments, State and Federal agencies, Native corporations, and other private landowners and interest groups with meaningful opportunities to participate in and influence the process of decision making affecting BLM-managed land in Alaska.

- Consistent with the national policy regarding Government-to-Government consultation and relationships with Tribes, consult as early in the agency's decision making process as possible, to the greatest extent practicable and to the maximum extent permitted by law, with Federally Recognized Tribes in Alaska prior to taking action or undertaking activities that affect Federally Recognized Tribes, their assets, rights, services, or programs. The BLM actions shall favor maximum participation of Federally Recognized Tribes in Alaska with a goal of informed decision making through consultation and collaboration.
- To the extent practicable, ensure that any actions likely to affect any land or water use or natural resource of the coastal zone be consistent with the enforceable policies of the Alaska Coastal Management Program.
- Notify the manager of the appropriate Federal conservation system unit of any proposed activity or use that may affect the unit. An opportunity for comment will also be offered.

Definitions

Aquatic: Relating to streams, rivers, springs, lakes, ponds, reservoirs, and other water bodies; plants and animals that live within or are entirely dependent upon water to live.

Assessment: A form of evaluation based on the standards of land health, conducted by an interdisciplinary team at the appropriate landscape scale (project area, sub-watershed, watershed, etc.) to determine conditions relative to standards.

Authorized Officer: Any person authorized by the Secretary of the Interior to administer the laws and regulations pertaining to public lands.

Biodiversity or Diversity: the variety of plants and animals that occupy a landscape. Includes species diversity and genetic variations within species.

Crust, Biotic: (microbiotic or cryptogrammic crust) a layer of living organisms (mosses, lichens, liverworts, algae, fungi, bacteria, and/or cyanobacteria) occurring on, or near, the soil surface.

Ecosystem: Organisms together with their abiotic environment forming an interacting system.

Energy Flow: the process in which solar energy is converted to chemical energy through photosynthesis and passed through the food chain until it is eventually dispersed through respiration and decomposition.

Erosion: The wearing away of land/soil by water, wind, gravitation, or other geologic agents. Often categorized into sheet erosion (even, overland flow), rill erosion (numerous but small channels), and gully erosion (less numerous, but more major channels). Natural erosion occurs under natural conditions (without the influence of man's activities).

Floodplain: the land area adjacent to a stream which is periodically flooded; an important component function of a riparian area.

Functioning Physical Condition: A characteristic of a component of an ecosystem, usually a portion of a landscape or watershed, that indicates the degree of sustainability of that component; a balance between ecosystem components sought in order to assure continued production of desired resources.

Goals: A general description of a desired future condition (e.g., improve watershed conditions, achieve a desired plant community).

Groundwater: Water in the ground in the zone of saturation; water in the ground at or below the water table.

Guideline: Practices, methods, techniques, and considerations used to ensure that progress is made in a way and at a rate that achieves the standard.

Habitat: The natural abode of a plant or animal that provides food, water, shelter, and other biotic, climatic, and soil factors necessary to support life.

Indicators: Parameters of ecosystem function that are observed assessed, measured, or monitored to directly or indirectly determine attainment of a standard(s).

Infiltration: The downward entry of water into the soil.

Interdisciplinary Team: A team of varied land use and resource specialists formed to provide a coordinated, integrated information base for overall land use planning and management.

Interested Public: An individual, group, or organization who submits a written request to the authorized officer requesting an opportunity to be involved in the decision making process.

Landscape: A defined area that forms a management unit or basis of analysis.

Landform: A discernible natural landscape that exists as the result of geological activity, such as a plateau, basin, or mountain. In general, the physical attributes of an area of land, such as slope, exposure, geological origin, soil type, etc.

Litter: Undecomposed or slightly decomposed plant material deposited on the soil surface; a major source of nutrients entering the soil.

Native Species: Any species of plant or animal naturally occurring within a given area of land or body of water; part of the original flora or fauna of the United States; indigenous.

Noxious Weed: An undesirable plant because it is of no forage value (or even toxic) or is capable of invading a community and replacing native species. Also referred to as invasive, non-native species.

Nutrient Cycle: The movement of essential elements and inorganic compounds between the reservoir pool (soil, for example) and the cycling pool (organisms) in the rapid exchange (i.e., moving back and forth) between organisms and their immediate environment.

Organic Matter: Plant and animal residues accumulated or deposited at the soil surface; the organic fraction of the soil that includes plant and animal residues at various stages of decomposition; cells and tissues of soil organisms and the substances synthesized by the soil population.

Permeability: The ease with which gases, liquids, or plant roots penetrate or pass through a bulk mass of soil or layer of soil.

Planning Criteria: The standards, rules, and other factors developed by managers, the public, and interdisciplinary teams for their use in forming judgments about decision making, analysis, and data collection during planning. Planning criteria streamline and simplify the resource management planning actions.

Potential: The ecological condition of an area that is reasonably possible given the physical, biological, social, and economic factors.

Properly Functioning Condition: An attribute of a landform that indicates its ability to produce desired natural resources in a sustained way. when used to refer to a riparian area, expresses the ability of the ecosystem to dissipate energy, filter sediment, transfer nutrients, develop ponds, and channel characteristics to benefit fish production, waterfowl, and other uses, improve water retention and groundwater recharge, develop root masses that improve streambank stability, and support greater biodiversity. In upland landforms, it is an indication of the ecosystem's ability to sustain the natural communities.

Public Lands: Land or interest in land owned by the United States and administered by the Secretary of the Interior through BLM.

Resource Advisory Council: A group of citizens representing a diversity of interests concerned with management of public lands. In Alaska, a statewide body advising the BLM State Director on public land issues and solutions.

Riparian: An area of land directly influenced by permanent water. It has visible vegetation or physical characteristics reflective of permanent water influence. Lake shores and streambanks

are typical riparian areas. Excluded are such sites as ephemeral streams or washes that do not have vegetation dependent on free water in the soil.

Sediment: Soil transported from its point of origin into drainages and streams by water, or relocated from point of origin to other sites by wind.

Sensitive Species: All species that are under status review, have small or declining populations, or live in unique habitats. May also be any species requiring special management. Sensitive species include threatened, endangered, or proposed species as classified by the U.S. Fish and Wildlife Service, or species designated by a State wildlife agency as needing special management.

Significant Progress: When used in reference to achieving a standard: (actions), the necessary land treatments, practices, and/or changes to management have been applied or are in effect; (rate), a rate of progress consistent with the anticipated recovery rate described in plan objectives with due recognition of the effects of climatic extremes (drought, flooding, etc.) fire, and other unforeseen natural occurring events or disturbances.

Soil Moisture: Water contained in the soil; commonly used to describe water in the soil above that water table.

Special Status Species: Species proposed for listing, officially listed, or candidates for listing as threatened or endangered by the Secretary of the Interior under the provisions of the ESA; those listed or proposed for listing by the State in a category implying possibly endangerment or extinction; those designated by each BLM State Director as sensitive.

Species of Local Importance: Species of significant importance to Native American populations (e.g., medicinal and subsistence plant and animals).

Standard: an expression of the physical and biological condition or degree of function necessary to sustain healthy ecosystems.

Threatened and Endangered Species: Plant or animal species listed by the U.S. Fish and Wildlife Service (FWS) pursuant to the ESA as either in danger of becoming extinct or threatened to the degree that their continued existence as a species is in question. Proposed Species: plant or animal species proposed by FWS for listing as Endangered; protected under the ESA. Candidate Species: plant or animal species considered as potentially Threatened but not yet proposed by FWS for listing; not protected by the ESA.

Uplands: Lands above the riparian/wetland area, or active floodplains of rivers and streams; those lands not influenced by the water table or by free or unbound water; commonly represented by tow slopes, alluvial fans, and side slopes, shoulders and ridges of mountains and hills.

Watershed: Land base that contributes to the surface flow of water past a given point. The watershed dimensions are determined by the point past or by runoff flows.

Watershed Function: The principal functions of a watershed include the capture of moisture from precipitation; the storage of moisture within the soil profile; and the release of moisture through subsurface flow, deep percolation to groundwater, evaporation from the soil, and transpiration by live vegetation.

Wetland: Areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and which under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.

Woody: Consisting of wood, such as trees or bushes.